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hastened in its swift current to auxiliary parts of the body for help in the shape of nourishment and oxygen. Some of these outshoots of chromatin may find developing germ cells and modify to a slight degree the inheritance of the next and succeeding generations. This would be no more wonderful than the changes produced in distant parts of an organism by antibodies, hormones and chalone.

It is fortunate for each species of plant and animal that the changes in inheritance come slowly, keeping pace with the changes in the average environment, otherwise the plant or animal might not survive in its struggle for existence. In the geologic history of the earth many forms have failed to keep pace with their environment, or have advanced too rapidly, and in consequence have perished. Thousands of plants and animals that varied in the wrong direction, or too rapidly, or too slowly, were destroyed in the different periods of the earth's history, but other thousands of their relatives varied with their environments and therefore survived to continue earth's faunas and floras.

While the hormones (stimulators), chalone (retarders) and antibodies (immunizers) may not be alive, they originate in living cells and act on living cells, and hence owe their efficiency in guiding the development of plants and animals to protoplasm energized through life. It is life that is the variable and produces variations in organisms.

Darwin himself fully understood the limitations of his theory of natural and artificial selection. He knew that selection alone could not originate a part of a plant or animal or even modify it. Selection can merely sit in judgment on the work of conscious use or disuse, and reject the individual when it is harmful to the species, or accept the individual when it is helpful. The effects alone of conscious use and disuse of cells, tissues and organs can be inherited. Each tissue and organ had its beginning so long ago in time, and so far down in the plant or animal kingdom, that the cells were at first but slightly modified by life, and millions of years were required to bring the tissue or organ to perfection. Once completed, other millions of years are needed to lose the part, so slowly are species-instincts changed by life through disuse.

A Probable Case of Superfetation in the Cow.

MARY T. HARMAN.

Contribution from the Zoölogical Laboratory of the Kansas State Agricultural College, No. 21 (abstract).

A cow which was mated on December 22, 1916, gave birth to a calf on September 27, 1917. The calf was a normally developed female slightly above the average in size. On October 1 this cow gave birth to another calf, which, according to the decision of the veterinarian, was a little more than a four months' fetus. This second calf was inclosed in the animon, and the placenta was in good condition. Although the calf was dead when born, the death had evidently occurred only a short time previously, as there was no indication of decay.